

IN THE CLAIMS

1. (currently amended) A method for managing locomotives in a railyard including a parking yard and a service yard, based on possible future states of the parking yard and the service yard, using a system including a computer, said method comprising the steps of:

establishing an initial state of the locomotives in the parking yard and the service yard;

enumerating possible present locomotive railyard parking options;

enumerating possible future railyard parking configurations arising from each possible present locomotive railyard parking option;

examining each possible future railyard parking configuration; ~~and~~

determining a metric for parking decisions using the initial state of the locomotives in the parking yard and the service yard, an inbound schedule that identifies the locomotives arriving on an inbound train consist, an outbound schedule that identifies which outbound train consist to which each locomotive is assigned, and the possible railyard parking options;
and

choosing a present locomotive railyard parking option based on the examination of the possible future railyard parking configurations and the metric.

2. (currently amended) A method in accordance with Claim 1 wherein said step of enumerating possible present locomotive ~~placement~~ railyard parking options comprises the steps of:

evaluating a geometry of the parking yard; and

evaluating a geometry of the service yard.

3. (canceled)

4. (previously presented) A method in accordance with Claim 1 wherein said step of establishing an initial state of the locomotives in the parking yard and the service yard comprises the steps of:

evaluating a present locomotive configuration of the parking yard; and

evaluating a present locomotive configuration of the service yard.

5. (currently amended) A method in accordance with Claim 1 wherein said step of enumerating possible future railyard states parking configurations comprises the steps of:

evaluating the initial railyard state; and

evaluating a yard schedule.

6. (original) A method in accordance with Claim 5 wherein said step of evaluating a yard schedule comprises the steps of:

evaluating an inbound locomotive schedule; and

evaluating an outbound locomotive schedule.

7. (original) A method in accordance with Claim 6 wherein said step of evaluating a yard schedule further comprises the steps of:

evaluating service requirements of inbound locomotives;

evaluating a list of locomotive service types provided in the service yard; and

evaluating non-standard movements of locomotives within the railyard.

8. (original) A method in accordance with Claim 1 wherein said step of examining each possible future railyard state comprises the steps of:

examining a cost of each possible future state; and

examining a time based efficiency of each possible state.

9. (original) A method in accordance with Claim 8 wherein said step of examining a cost of each possible future state comprises the steps of:

examining costs incurred from delays to the outbound locomotive schedule caused by the service requirements;

examining costs incurred in performing non-standard movements;

examining costs incurred by schedule delays caused by non-standard movements; and

examining costs incurred by late departure of a locomotive.

10. (original) A method in accordance with Claim 8 wherein said step of examining a time based efficiency of each possible state comprises the steps of:

examining delays to an outbound locomotive schedule caused by the service requirements; and

examining delays caused by non-standard movements.

11. (original) A method in accordance with Claim 1 wherein said step of choosing a present option comprises the step of executing a locomotive management algorithm utilizing the computer.

12. (original) A method in accordance with Claim 11 wherein said step of executing a locomotive management algorithm comprises the steps of:

applying a set of yard management objectives;

applying a set of parking yard management rules; and

applying a set of service yard management rules.

13. (original) A method in accordance with Claim 12 wherein said step of applying a set of yard management objectives comprises the steps of:

assembling an outbound locomotive consist as scheduled;

delivering an outbound locomotive consist as scheduled;

reducing a total labor usage figure for labor involved in assembling and delivering an outbound locomotive consist;

reducing delays in locomotive servicing; and

comparing the cost of late locomotive consist departure to additional labor costs needed to assemble and deliver an outbound locomotive consist as scheduled.

14. (original) A method in accordance with Claim 12 wherein said step of applying a set of parking yard management rules comprises the steps of:

executing locomotive pull-forwards when there is a reduced number of locomotives on an affected parking track;

maintaining an order of locomotives on each parking track such that locomotives for later outbound locomotive consists are parked behind locomotives for earlier outbound locomotive consists; and

parking a lead locomotive for an outbound locomotive consist on a parking track such that the lead locomotive is in front of other locomotives parked on the same track that are allocated for the same outbound locomotive consist.

15. (original) A method in accordance with Claim 12 wherein said step of applying a set of service yard management rules comprises the steps of:

positioning a locomotive in a queue for service on a lead-in track to a service bay that provides the appropriate service;

positioning locomotives in a queue on a lead-in track in an order that allows servicing of each locomotive to be completed before each locomotive is scheduled for assembly in an outbound locomotive consist; and

scheduling short service activities before long service activities when scheduling conflicts are not at issue.

16. (currently amended) A networked system for managing locomotives in a railyard including a parking yard and a service yard, based on possible future states of the parking yard and the service yard, said system comprising:

a client system comprising a browser;

a database for storing information;

a server system coupled to said client system and said database, said server system configured to:

establish an initial state of the locomotives in the parking yard and the service yard;

enumerate possible present locomotive ~~placement~~ railyard parking options;

enumerate possible future railyard ~~states~~ parking configurations arising from each possible present locomotive ~~placement~~ railyard parking option;

examine each possible future railyard ~~state~~ parking configurations; and

determine a metric for parking decisions using the initial state of the locomotives in the parking yard and the service yard, an inbound schedule that identifies the locomotives arriving on an inbound train consist, an outbound schedule that identifies which outbound train consist to which each locomotive is assigned, and parking options; and

determine a present option based on the examination of the possible future railyard states and the metric.

17. (currently amended) A networked system in accordance with Claim 16 wherein to enumerate possible present locomotive ~~placement~~ railyard parking options said server system further configured to:

evaluate a geometry of the parking yard; and

evaluate a geometry of the service yard.

18. (canceled)

19. (previously presented) A networked system in accordance with Claim 17 wherein to establish an initial state of the locomotives in the parking yard and the service yard said server system further configured to:

evaluate a present locomotive configuration of the parking yard; and

evaluate a present locomotive configuration of the service yard.

20. (previously presented) A networked system in accordance with Claim 17 wherein to enumerate possible future railyard parking configurations said server system further configured to:

evaluate the initial railyard state; and

evaluate a yard schedule.

21. (original) A networked system in accordance with Claim 20 wherein to evaluate a yard schedule said server system further configured to:

evaluate an inbound locomotive schedule; and

evaluate an outbound locomotive schedule.

22. (original) A networked system in accordance with Claim 21 wherein to evaluate a yard schedule said server system further configured to:

evaluate service requirements of inbound locomotives;

evaluate a list of locomotive service types provided in the service yard; and

evaluate non-standard movements of locomotive within the railyard.

23. (original) A networked system in accordance with Claim 16 wherein to examine each possible future railyard state said server system further configured to:

examine a cost of each possible future state; and

examine a time based efficiency of each possible state.

24. (original) A networked system in accordance with Claim 23 wherein to examine a cost of each possible future state said server system further configured to:

examine a cost of delays to the outbound locomotive schedule caused by the service requirements; and

examine a cost of non-standard movements.

25. (original) A networked system in accordance with Claim 23 wherein to examine a time based efficiency of each possible state said server system further configured to:

examine costs incurred from delays to the outbound locomotive schedule caused by the service requirements;

examine costs incurred in performing non-standard movements;

examine costs incurred by schedule delays caused by non-standard movements; and

examine costs incurred by late departure of a locomotive.

26. (original) A networked system in accordance with Claim 16 further configured to execute a locomotive management algorithm by:

applying a set of yard management objectives;

applying a set of parking yard management rules; and

applying a set of service yard management rules.

27. (original) A networked system in accordance with Claim 26 wherein to apply a set of yard management objectives said server system further configured to:

assemble an outbound locomotive consist as scheduled;

deliver an outbound locomotive consist as scheduled;

reduce a total labor usage figure for labor involved in assembling and delivering a locomotive consist;

reduce delays in locomotive servicing; and

compare the cost of late locomotive consist departure to additional labor costs needed to assemble and deliver an outbound locomotive consist as scheduled.

28. (original) A networked system in accordance with Claim 26 wherein to apply a set of parking yard management rules said server system further configured to:

execute locomotives pull-forwards when there is a reduced number of locomotives on an affected parking track;

maintain an order of locomotives on each parking track such that locomotives for later outbound locomotive consists are parked behind locomotives for earlier outbound locomotive consists; and

park a lead locomotive for an outbound locomotive consist on a parking track such that the lead locomotive is in front of other locomotives parked on the same track that are allocated for the same outbound locomotive consist.

29. (original) A networked system in accordance with Claim 26 wherein to apply a set of service yard management rules said server system further configured to:

position a locomotive in a queue for service on a lead-in track to a service bay that provides the appropriate service;

position locomotives in a queue on a lead-in track in an order that allows servicing of each locomotive to be completed before each locomotive is scheduled for assembly in an outbound locomotive consist; and

schedule short service activities before long service activities when scheduling conflicts are not at issue.

30. (previously presented) A networked system according to Claim 16 wherein the client system and the server system are connected via a networked and wherein the network is one of a wide area network, a local area network, and an Intranet and the Internet.

31. (original) A networked system according to Claim 16 wherein said server system is further configured with a displaying component for displaying various user interfaces to the user, a receiving component for receiving an inquiry to provide information from one of a plurality of users, a collection component for collecting information from users into the centralized database, a tracking component for tracking information on an on-going basis, and an accessing component for accessing the centralized database and causing the retrieved information to be displayed on the client system.

32. (original) A networked system according to Claim 31 wherein said server system further configured with a processing component for searching and processing received inquiries against the data storage device containing a variety of information collected by the collection component.

33. (original) A networked system according to Claim 31 wherein said server system further configured with a retrieving component to retrieve information from the data storage device.